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DISCOVERIES AND IMPROVEMENTS IN ARTS, MANUFACTURES, AND AGRICULTURE.

*Additional Observations on sawing Cast Iron.** *By M. Dufaudier.*

(From the Annales des Arts, &c.)

M. DUFAUDIER has made several experiments on the method of sawing cast iron, according to the instructions of M. D'Arcet. Convinced of the facility with which hot cast-iron may be cut by means of a common saw, he has employed this method in his own works.

The following are the results of his different experiments:

1. That cast iron, when hot, can be sawed with as much facility and expedition as dry wood.

2. That in order to diminish the resistance, but very little play must be given to the saw.

3. That the iron, when heated in a kiln, saws better than that which is heated at a forge. The reason is simple. In a kiln it is equally heated in every part, whereas at a forge the part that is nearest the air tube is almost in fusion, while the opposite part is scarcely red.

4. That it is necessary to avoid making the iron too hot, for if the surface approach too near to a state of fusion, the saw softens, and the operation is ill performed.

5. That the saw should be moved with much velocity, because it does not warm so soon, it makes its way better, and the part cut is much more true and clean.

6. Lastly, that the cast iron should be placed on solid bearings, except under the immediate passage of the saw, otherwise there is danger that it may break before the end of the operation.

M. Molard, impressed with the utility of this method, repeated it immediately at the *Conservatoire des Arts et Metiers*, on pieces of cast iron of 0,07 metres square, and on plates of different thicknesses.

He employed a common saw, such as is used for wood, and perfectly succeeded in sawing different pieces without injuring the teeth of the saw. He observed that the iron should not be heated to a cherry red, that the saw should have but very little play, and that it must be moved quickly, and the whole length of the saw employed at each stroke or cut.

M. Pictet had seen a workman in the establishment of M. Paulino at Geneva, saw asunder a hot cast iron pipe. He mentioned it to M. Thenard, who communicated it to M. Molard. This gentleman, after making the experiments above-mentioned, found that the process was known to a workman of M. Voyeaux, who availed himself of it for fitting cast iron plates, intended for stoves of different sizes.

It is very probable that this method, so very simple, is also known in other places; but still it has been in a manner lost to the public, since it was unknown to the generality of persons who were distinguished in the arts.

We have seen that the experiments of M. Dufaudier confirm the relation of M. Pictet, and the trials made by M. Molard; there remains, therefore, no doubt of the possibility and also the utility of this process, the knowledge of which cannot be too much circulated.

Experiments on the Culture of Potatoes. By the Rev. James Willis, President of the Christ-Church Agricultural Society.

As the culture of the potatoe is next in consequence to the culture of wheat, I have taken some pains, among other experiments, to ascertain the positive effect of different manures on the product of potatoes, in the same soil, with the same species, and under the same management. The result may not be uninstructive to the public; I will therefore beg leave to submit the table of the experiment to the notice of the Board. The sort planted was the white round, on the 10th of April, 1811, on a clean sandy loam, well pulverised, in rows two feet asunder, 12 inches distant in the row, and six inches

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* For the former account see the Belfast Monthly Magazine for January, 1813, Vol. 10, page 54.